

WHAT IS CLAIMED IS:

1. A low noise block down converter comprising:
  - a signal reception unit receiving a broadcast signal transmitted from a first satellite to output a first RF signal;
  - 5 a local oscillator circuit receiving a supply of power supply current from a high potential node to discharge said power supply current from a low potential node;
  - a frequency converter converting said first RF signal into a first IF signal of an intermediate frequency band using an output signal of said local oscillator circuit;
  - 10 an output port for outputting said first IF signal; and
  - a power supply circuit supplying power to said local oscillator circuit and said first signal reception unit, wherein
  - said power supply circuit includes
  - a first voltage regulator receiving a power supply via said output
  - 15 port to perform a voltage adjustment and applying a first DC voltage to said high potential node of said local oscillator circuit, and
  - a second voltage regulator receiving a potential at said low potential node of said local oscillator circuit to perform a voltage adjustment and applying a second DC voltage to said signal reception unit.
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2. The low noise block down converter according to claim 1, wherein
  - said local oscillator circuit includes a plurality of local oscillators respectively outputting a plurality of local oscillation signals.
3. The low noise block down converter according to claim 2, wherein
  - said power supply circuit includes a switch selectively supplying said first DC voltage to said plurality of local oscillators.
4. The low noise block down converter according to claim 1,

wherein

said signal reception unit includes a plurality of low noise amplifiers respectively receiving a plurality of broadcast signals.

5. The low noise block down converter according to claim 4,  
wherein

said power supply circuit includes a switch selectively supplying said second DC voltage to said plurality of low noise amplifiers.

6. The low noise block down converter according to claim 1,  
wherein

5 said local oscillator circuit includes a transistor receiving a base bias voltage that is higher than an output target voltage of said second voltage regulator at least by a base-emitter voltage.

7. A low noise block down converter comprising:

5 a signal reception unit receiving a supply of power supply current from a high potential node to discharge said power supply current from a low potential node and receiving a broadcast signal transmitted from a first satellite to output a first RF signal;

a local oscillator circuit;

a frequency converter converting said first RF signal into a first IF signal of an intermediate frequency band using an output signal of said local oscillator circuit;

10 an output port for outputting said first IF signal; and

a power supply circuit supplying power to said local oscillator circuit and said first signal reception unit, wherein

said power supply circuit includes

15 a first voltage regulator receiving a power supply via said output port to perform a voltage adjustment and applying a first DC voltage to said high potential node of said signal reception unit, and

a second voltage regulator receiving a potential at said low potential node of said signal reception unit to perform a voltage adjustment and

20 applying a second DC voltage as a power supply voltage to said local oscillator circuit.

8. The low noise block down converter according to claim 7, wherein

said local oscillator circuit includes a plurality of local oscillators respectively outputting a plurality of local oscillation signals.

9. The low noise block down converter according to claim 8, wherein

said power supply circuit includes a switch selectively supplying said second DC voltage to said plurality of local oscillators.

10. The low noise block down converter according to claim 7, wherein

said signal reception unit includes a plurality of low noise amplifiers respectively receiving a plurality of broadcast signals.

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11. The low noise block down converter according to claim 10, wherein

said power supply circuit includes a switch selectively supplying said first DC voltage to said plurality of low noise amplifiers.

12. The low noise block down converter according to claim 7, wherein

5 said local oscillator circuit includes a transistor receiving a base bias voltage that is higher than that of a ground node at least by a base-emitter voltage.